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THE

Journal of the Society of Arts,

AND OF

THE INSTITUTIONS IN UNION.

No. 209. FRIDAY, NOVEMBER 21, 1856. Vol. V.

Journal of the Society of Arts.

FRIDAY, NOVEMBER 21, 1856.

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FIRST ORDINARY MEETING.

WEDNESDAY, Nov. 19, 1856.

The First Ordinary Meeting of the One Hundred and Third Session was held on Wednesday, the 19th inst., Col. W. H. Sykes, F.R.S., Chairman of the Council, in the Chair.

The following Candidates were balloted for, and duly elected :—

Benham, Frederick.
Benham, John Lee.
Dudgeon, Patrick.
Hill, Rev. James, B.D.
Masterman, Wm. Stanley.
Shaw, Bentley.

The following Institution has been taken into Union since the last announcement :—

423. Black Dike Mills, Literary and Scientific Institution.

Colonel W. H. SYKES, F.R.S., as Chairman of the Council, delivered the following

ADDRESS.

I find that the Bye-laws of the Society of Arts, Manufactures, and Commerce demand from the Chairman of the Council of the Society an address upon the opening of the new session; and in execution of the duty required from me, I proceed cheerfully to attempt the task, regretting only that it has not fallen upon some other member, whose knowledge and experience in the working and objects of the Society would have made it more advantageous to the interests of the Society, and certainly more acceptable to its inaugural meeting. My duty, I believe, is less to give a retrospect of the work of the past year, than a foreshadowing, as it were, of our proposed operations and aspirations for the forthcoming session. Properly it is the duty of the Council in its Annual Report to review our byegone labours; nevertheless, the example of my predecessors in this chair will justify me, in case I find it desirable, momentarily to recall your attention to any subject already disposed of. And first, with respect to that which is of immediate interest to ourselves, in relation to the improved accommodation and comfort of our members. It will, no doubt, be in the recollection of very many members, that when it was necessary, ten years ago, to redecorate the Great Room, in which we are assembled, it was necessary to invite special subscriptions, and borrow on debenture £1,000, for the purposes of the Society. We have reason to congratulate ourselves on the contrast which our present position exhibits. It has not *now* been necessary to ask for subscriptions, or to borrow money for the costly work of redecoration and repairs. Our means have not only sufficed for these objects, but the promise of the Council in their last report has been fulfilled, and £500 of the debenture debt paid off. Increased accommodation will be afforded. By re-arrangement the Council propose to devote to the members three apartments on the ground-floor as reading and reception rooms and library. The treasures of the library, which have hitherto been less prominently before the Society, and have been less available than they deserved, as the volumes mostly contain records of important facts, will have such a disposition as to invite members to their profitable use. The inconveniences of last year, arising from defective lighting and ventilation, it is to be hoped are now obviated, and it will be patent to the members that the necessity for an improvement in the appearance of the Great Meeting Room has not escaped the attention of the Council. While on the subject of your present location and home, it is right to invite the members to a prudent forethought of their whereabouts hereafter. The Society of Arts and its domicile, which have become venerable together by near a century of association, are threatened with a rude disseverance by the termination of their legal tie to each other; in short, in ten years the Society's lease expires, and, considering the magnitude of the Society, the magnitude of its association, the scale of its exhibitions, and its past, and, it is to be hoped, increasing reputation, its *domus* or home should be in keeping not only with its present dignified position, but with its anticipated future development. Considering that that marvel of our times, the Great Exhibition of the Industry of all Nations, had its germ in the working of this Society, and that its successful results were chiefly owing to the personal interest taken in the Exhibition by our President, Prince Albert, and by the aid and advice of the Council and leading members of the Society—considering, I say, these facts, it appears to me that it would only have been in harmony with the common objects of the Exhibition and of the Society, that the Exhibition, from its accumulated wealth, should have testified to a grateful sense of its parentage by an assignment or contribution of funds for the erection of a domicile suitable to the Society's wants, upon the frieze of which the Prince would probably have desired to see inscribed—

Esto perpetua.

Such reasonable anticipations not having been realised, it is a matter for grave thought with the members of the Society to devise such means and take such early precautions as shall secure to the Society, when the period for the vacation of the present house arrives, a larger and better abode, and whose internal accommodation shall be better suited than the present to the wants of the Society, involved in which, it must be borne in mind, is space for the exhibition, and, indeed, permanent display, of specimens of the most recent improvements in the several departments of manufacturing industry, many of which prove their worth and practical usefulness by winning the Society's medals and prizes; but with the Society's present accommodation, the labours for the accumulation of objects are scarcely completed, than the pressure for the admission of the inventions of newer candidates for popular favour compels substitutions which destroy or disarrange the instructive sequence of the whole. A larger building than the present, with more accommodation, is, therefore, evidently necessary, and as houses already built are little likely to be adapted to the necessities of the Society, it might be right for the Society to inquire whether, in the vast area which the Government is about to clear in Westminster, a site might not be obtained from the Government upon which a building could be erected for the Society, to harmonise in architectural character with the blocks of buildings which it is understood the Government is about to erect. I have dwelt at some length upon this subject, for it is one, be assured, involving the future interests of the Society.

In proximate association with this subject of the House, is the immediate and pleasing duty which will devolve upon me, at the termination of the address, of distributing the medals and prizes adjudged by the Society during the last year. To offer any remarks upon the policy or public advantage of a usage which has characterised the Society from early times, and in which many thousands of pounds have been spent to reward the inventive faculties of praiseworthy and enviable individuals, and to stimulate by such examples the inventive faculties of others, would be to trifle unjustifiably with your time and attention; and, by an advocacy or an argument, would imply a doubt, which can have no existence in the mind of any one I have the honour to address. Assuredly great caution should be exercised in the adjudication of distinctions which give to the selected the advantages of public confidence and respect, to the possible detriment and damage of confiding individuals, and certainly to the discredit of the Society, in case the medals and prizes were adjudged upon insufficient ground, and more particularly in case the inventions themselves were destitute of a palpable practical character. I have every reason to believe, that the adjudications of the Society have been at all times regulated by the intrinsic merit of the inventions and the importance of their application, and to have been equally free from favour or affection.

To show the important nature of the inventions and subjects which have been under the review of the Society, is beyond my purpose, and it will suffice to enumerate those of the present year:—

Silver Medals.—To Messrs. J. Kenyon Blackwell, Humphrey Chamberlain, John Bailey Denton, William Felkin, Chandos Wren Hoskyns, for their Papers read at the Society's evening meetings.

A Silver Medal.—To Professor Clark, M.D., for his "Application of Lime to the Softening and Purifying of Water for the Supply of Towns."

A Silver Medal.—To Herr Paul Pretsch, for his "Application of Photography and the Electrotype to the Production of Engraved Copper Plates for Printing."

A Silver Medal.—To Mr. James King, for the "Importation of Wine, the Growth of Vineyards in New South Wales."

Special Prizes, of a Gold Medal.—To Mr. Charles Wye Williams, for his Essay "On the Smoke Nuisance;"

And of a Silver Medal.—To Mr. Charles Hood, F.R.S., for his Essay on the same subject.

But a special prize amongst the members demands a special notice. The Society's gold medal was adjudged to Mr. Charles Wye Williams, for his essay "On the Smoke Nuisance;" a nuisance which has been suffered so long to exist, equally to the discredit of the government and the people, since it has been known for years that it was remediable; a nuisance, also, which will not be wholly abolished, even with the aid of the recent Act of Parliament applicable to that object, unless vigilant attention be paid by the public of London to the constantly recurring infractions of the law; or the quiet and recurring neglect of the personal labours necessary to secure the efficient working of the smoke consuming furnaces. Every man who sees the chimney of a manufactory in London vomiting forth a cloud of unconsumed carbon, should, from a sense of duty to his fellow-citizens, unhesitatingly act the "informer," and denounce the offending chimney, with the satisfactory conviction that he is doing a public good. Indeed it might be matter for consideration whether systematic attempts might not be made to induce private families to adopt Dr. Arnott's smokeless fire grates, which it is understood is not only efficient but economical; it would save us from the alarms and dangers of "chimney a fire," and the gradual and certain destruction of our costly furniture and gilded decorations.

Continuing the subject of labour within our own walls, it may be as well to mention at this stage of my address, and before I proceed to external operations, that the Council has anxiously sought to provide profitable pabulum for the evening meetings of the Society during the ensuing session, and they are glad to announce that their valuable coadjutor Dr. Royle, has proposed a paper upon Indian fibres for cordage, clothing, and paper making material. Mr. Binks is good enough to contribute a paper on some new methods of dealing with linseed and other oils, in relation to their drying properties, for paints and varnishes; and he has promised another paper, at an early period after Christmas, upon some hitherto unrecognised phenomena occuring in the manufacture of steel and malleable iron, in which Bessemer's and the new Austrian steel process will come in for consideration and discussion. Mr. Fothergill Cooke is prepared to describe the Leicester Sewage works; and Professor Owen will favour us with one of his valuable and instructive contributions, the subject of which is the "Ivory and Teeth of Commerce."

These arrangements provide for the meetings of the Society up to Christmas; after which period hopes are entertained that the resources of our numerous Colonies may be illustrated. Mr. Temple, the Chief Justice of Honduras, has undertaken to favour us with a paper upon Honduras. It is reasonable to expect that the overtures which we have already made to form a Union of Colonial Institutions, in which we have been successful to the extent of ten Institions, similar to our Home Unions, will insure us a cordial sympathy and aid from our associates abroad, which, we trust, we shall be enabled to reciprocate in a way to strengthen their interests and to invigorate their usefulness. It is unnecessary to enumerate here the terms and objects of these unions, as they are recorded at page 568, in the *Journal* of the Society.

The Society during the last year gave its attention to the present severe pressure upon Literary and Scientific Institutions, by rates and taxes; and, through the medium of its parliamentary friends, caused a bill to be introduced for the relief of Institutions. Although to some extent at first opposed by the government, the bill passed through some stages, but the session wore on, and the unusually early prorogation of Parliament left no time for its passing through the House of Lords; it was therefore dropped, but it will be re-introduced early next session, and carried through, it is to be hoped, to a successful result.

The present state of the Patent Law also has engaged the attention of the Council, and will continue to do so during the ensuing session. The subject is an intricate one, and considerable diversity of opinion appears to prevail upon its policy and bearing; but there is a community of opinion that in its present state the Practice and Procedure of the Patent Law requires amendment.

Judging from the reply of the present Lord Chancellor, given to Lord Harrowby, as representing the Committee of the British Association, there is no indisposition whatever on his part, as the Chief Commissioner of Patents, to adopt any well considered plans for amendment which may be urged upon him.

I would invite the attention of the Society to the remarkable fact that in this age, fertile in inventions and inquiry, the Council have deemed it right to publish a list of prizes for desiderata in improvements in inventions already existing, or for new inventions, or matters which our daily increasing wants call for. This list comprises no less than 216 subjects, and many of them are of the highest importance to almost every class engaged in manufactures, science, or commerce. If two or three of them are mentioned as typical of the whole, the practical good sense which dictated their selection, and the earnest desire of the Society to render their labours useful to the public, will, I trust, be manifest. For instance, a prize for the "*Best methods of distilling coal or bituminous substances, and utilizing the residuum.*" For "*The best means of preventing salt efflorescence in walls.*" For "*The best method of economically deodorizing sewage and other waters, or of precipitating or otherwise extracting the matter held by them in suspension.*" For "*An Essay on the management and maintenance of public roads, with special reference to their altered position since the introduction of railways.*" For "*An Essay on the various branches of industry which are known to be unhealthy, pointing out the causes of their injurious effects, with suggestions for prevention or relief.*" For "*The discovery of any simple and efficient apparatus for detecting and registering impure states of the atmosphere, either in mines or in overcrowded and ill-ventilated buildings.*" For "*A means suitable for office use of writing, copying, or producing a single or several copies of a document at one time by electricity or otherwise.*" For "*An Essay on the various concretes, cements, hydraulic mortars, and lutings for pipes, tanks, &c.*" Need I furnish further illustrations of the utilitarian spirit and benevolent views with which the subjects for the prizes are selected.

Commercial International Law, Tribunals of Commerce, Chambers of Commerce, Manufacturing industry, and the present state of commercial enterprise between Great Britain and other countries, would carry me into so wide a field of observation and remark, that I dare not trespass upon your patience to the extent these subjects would necessarily demand. I shall limit myself, therefore, to a hasty comment upon them. Commercial International Law has been taken up with very great interest by Professor Leone Levi; and, considering the gravity and importance of the subject, and the unquestionable public and universal advantage of common laws to regulate commercial intercourse between different countries, the Society would necessarily give its aid in furtherance of the attainment of so great a good. But the local characteristics of peoples; their laws, interwoven with their social institutions; and the prejudices arising from differences of race and language, present obstacles which seem to be insuperable. Man and his institutions, however, change with time; and a persevering and cautious pursuit of the object may in the end be successful.

On the subject of the establishment of Tribunals of Commerce, for arbitrations upon commercial questions, instead of having recourse to courts of law as at present, as such tribunals are found to be beneficial in foreign states, it would seem that they might be equally advantageous amongst ourselves; but, from some unexplained cause, although many great commercial names are associated with the undertaking, Tribunals of Commerce are still a desideratum.

Commerce is in fact the bartering the products and manufactures of one country with another; it grows or wanes, rises or falls, with the relations between supply and demand. The cost of production affects it; the inequality of reciprocal wants affects it; the indifference of manufactures to the tastes of their customers affects it. War did greatly affect it; but now, since the Peace of Paris, that neutral ships make neutral goods, war will be less injurious to commerce than heretofore. Arbitrary protective or heavy duties affect it; but it is to be hoped that the example of England, and the growing free trade spirit, which was so strongly manifested by the delegates of many nations recently at the Congress at Brussels, may ere long influence governments and cause commerce to be left to pursue her path unrestricted. Nevertheless, even when left to herself, between free countries, aberrations occur which gainsay the anticipations and predictions of political economists and the Nestors of commerce. When gold was found in such profusion in California, and subsequently in Australia, it was predicted that the former relations between gold and silver would be immediately and seriously affected, and that the prices of labour and commodities would greatly rise, from the abundance of gold. And what is the real state of these predictions? Neither the prices of labour nor of commodities have increased *pro rata;* but the price of gold itself has increased in foreign countries in consequence of the demand for it beyond the supply, originating in the perennial drain of silver from Europe, to liquidate the balance of trade in favour of China and India. In the month of January last, I read to the Statistical Society of London, a paper upon the "External Commerce of India with all the World." I showed from official statements, that there was an annually *increasing* net import of silver bullion into India, in consequence of the manufacturers of Europe not *increasing* the export of their manufactures to India in the same ratio as their *increasing* import of the products of India, and consequently the unusually increasing balance due to India was to be paid by *increasing* exports of silver bullion, the only receivable commodity in exchange; and I used these warning words: "It is of grave importance, therefore, to merchants trading with India, that they should have clear and comprehensive views of those normal conditions which indicate that their export trade in goods seems to have attained its maximum, while their import of Indian commodities has been annually increasing; and not less important is it, that the bullionists and bankers of England and of other countries should be constantly and fully alive to the exhaustive process of an Indian trade." I will not here repeat the tabulated facts communicated to the Statistical Society, but will limit myself to the statement that the unfavourable conditions of the commercial relations between India and England and China which I described in January last have been aggravated since that period. The average net amount of silver bullion imported into India from 1834-5 to 1841-2 was £1,858,000. The average had increased, from 1849-50 to 1853-54, to £3,799,900 sterling; but by the latest accounts it was more than six millions in 1854-55; and the export of silver from 4th January to 20th December, 1855, to China and India from England alone, was £6,409,889; and in the present year it is understood it will be eight millions sterling. It has always appeared to me that this drain of silver from England for the payment of the produce of India might be mitigated by the manufacturers of England and other countries adapting their manufactures exactly to the tastes of the people of India. Very little of the personal clothing of 150 millions of people in India is exported to India, and none of it in the form of fabrics in which the articles of clothing are worn—an omission which the manufacturers of England might surely supply; and as there will shortly be opened to the public a Trade Museum at the India House, of the raw and other products of India, it is to be hoped manufacturers may in time efficiently assist to diminish this existing difference in the exchange between the trade products of India and England, and that there may be a consequent diminishing drain of silver bullion in the adjustment of the balance of trade. I may add that from 1833-34 to 1854-55 inclusive, the three mints of India have coined into rupees £71,202,828 of silver bullion.

For above a century we have been designated the Society for the Encouragement of Arts, Manufactures, and Commerce; and, in a cursory glance at our designation, the consideration of the education of the people may not appear directly within the compass of our objects. Nevertheless, a moment's thought will bring to our minds the conviction, that the arts will be more practically useful, manufactures more economically organized, and commerce will be conducted with more permanently profitable results, if the minds of those engaged in these pursuits are suitably instructed, or, in other words, educated. But what is education? Does a little knowledge (for it is rarely a perfect knowledge) of writing, reading, arithmetic, and a religious catechism, constitute education?—acquirements which are mastered before a child is ten years of age. Where is the profit of writing, when there are few or no ideas to record;—what the advantage of reading, without thought;—what the capacity to master the multiplication table, without applying it; and what a fluent utterance of terms of faith, without probably the possession of a definite religious sentiment, and without a guarantee of conduct from the absence of moral convictions. And yet this defective state of instruction of the masses has long, and does still, characterise benevolent England, and is denominated education. Unhappily, our present jail returns disable us from questioning the reality of the picture thus darkly drawn. And what, in a country so wealthy, with so much of mental energy, so much of practical common sense, and so much of active benevolence as England is generally admitted to possess; what, I say, can be the solution of an apparent enigma in the will and the effort to educate the masses being hitherto abortive, or nearly so. Alas! a primary law of our nature, a ceaseless stimulant of action, and with the poor almost always resistless—selfishness—steps in to nullify and render fruitless equally the labours of love of the benevolent, the philosophic, and the religious, and the provisions of the legislature. The humble parents who are operatives, struggling with the difficulties of maintaining themselves and large families in the disproportion between wages and the cost of support, are impelled to withdraw their children from school at the very age and at that state of instruction when the mental faculties are being developed, when the little the children have learnt, could and would, if instruction were continued, be expanded into useful knowledge. At that critical moment the parents turn their children's labour to profitable account; they take them from school, usually at the age of ten, or even earlier, engage them in domestic offices, sell their services in the mill, or in agriculture, and for future mental culture the child and the man are left to the rough, and rarely moral or religious experiences of vulgar life. The little that was learned, the writing, reading, arithmetic, and catechism, the means to ends, are either forgotten or are in abeyance, and the future enjoyments are those of the senses—the animal prevails, the "Mens divina" is obscured.

It was the contemplation of this physical and mental condition of the operative classes that led the benevolent mind of Dr. Birkbeck to the consideration of the means of applying a remedy to the evil; or at least to offering the facilities to the willing of the operative classes for escape from the mental darkness in which they were enveloped into the bright light of a cultivated intellect. Hence originated the Mechanics' Institutions of Great Britain, chiefly from the co-operative labours of the operatives themselves. Their halls sprung up—their libraries became respectable; gratuitous lecturers gave their aid; and there was a reasonable prospect of the child's interrupted education being completed in the man by self-study. Objections there were to these Institutions. It was asserted, that it either made those who were ambitious smatterers in science and literature, self-sufficient, conceited, and discontented with their condition, or that they wasted their time, and excited morbid sympathies, by reading novels and works of fiction. There may be some truth in all these objections, but the history of the Institutions seems to indicate that the good they produced more than balanced the evil. Some who applied themselves gravely to physics and mathematics, have emerged from the operative condition into that of instructors and masters and men of wealth; and, in the ears of thousands, the facts, whether of nature or not, enunciated by the lecturer, must have, at times, occasioned either a profitable or a pleasurable reminiscence. But working men, in these Institutions, it is said, read novels! and why not? Most of the toil-worn operatives, at the close of their ten or twelve hours' labour, seek stimulus and recreation. The choice is between the gin-palace and pot-house and the library and lecture-room of the Mechanics' Institution. Better a draught of morbid sensibility than inebriating alcoholic drams or muddling pots of porter. Certainly the draught is less costly. But has not the operative the passions, perceptions, and susceptibilities of our common nature? Cannot his heart be moved, his joy excited, and his admiration stimulated by the incidents of ordinarily good novels?—at least, he sees pictures of the usages of society, marks the language of intercourse and the amenities of cultivated life—all which he cannot see in his own condition. Depend upon it, the roughness, the oaths, the coarse and rude phraseology, the animal enjoyment, the harsh treatment of his wife, which may have been his characteristics before, will be gradually softened, and may, in time, disappear. I do not, therefore, disapprove of the operative reading works of fiction, and I do not regret to see the proportion these works bear to other works withdrawn from the lending libraries of the kingdom.

It does not, however, necessarily follow, that the operative and agricultural peasant prefers works of fiction, that is to say, of amusement, rather than instruction with amusement. If I am to judge from the catalogue of a library of the Hants and Wilts Adult Education Society, an admirable association of 100 villages or more, which might be so profitably established in other parts of Great Britain, which has recently been kindly put into my hands, and in which the books chiefly used are marked in italics, I find that the "Arabian Nights," "Barnaby Rudge," by Dickens, "Last of the Barons," by Bulwer Lytton, "Bracebridge Hall," Edgeworth's Novels and Tales, "Confessions of a Lover," "Ivanhoe," "Jane Eyre," and many other novels, are less in request than Historical and Biographical works; particularly the lives of "Bonaparte," and "Duke of Marlborough," and "Sir Isaac Newton." "Chambers's Journal," and "Papers for the People," "Dickens's Household Words," "Half-hours with the best Authors," "The Penny and Saturday Magazines," "Layard's Nineveh," and "Tales and Stories from History," appear to be popular; while the graver subjects in request are: "Tracts," "The Pilgrim's Progress," "Useful Arts and Manufactories of Great Britain," "Social Evils and their Remedies," "Family Economist," "Cyclopedia of English Literature," "Conversation with a Father and his Children," "Defoe on the Plague," "The Letter Writer," and "The Races of Man." The popular works appear to be those of Scott, "Ten Thousand a Year," "Robinson Crusoe," "My Novel," by Bulwer, "Cottager of Glenbirnie," "The Old Oak Tree," "Uncle Tom's Cabin," and "Macaulay's Essays." There are no indications of much misspent time here; indeed the fact of communities of soldiers and sailors and agricultural labourers having amongst their popular readings, "Social Evils and their Remedies," "The Family Economist," "The Pilgrim's Progress," and "The Races of Man," may probably diminish the fears of the timid, with respect to the misapplication of book knowledge by the poor, and encourage the hopeful to look for the adult pupil becoming a better man and a better citizen.

But there is a large portion of the lower classes of the population which has not the advantages, such as they may be, of the operatives in towns; removed, like the former class, from school in childhood, from their dispersion over a considerable area, they have scarcely the means of association or combination for the erection of common halls, common libraries, and the insuring instruction from lecturers—I mean the agricultural labourers: Unlike the mechanic—from him the further means of mental instruction in manhood are nearly cut off. It may, indeed, be said by the poet, that

> "The field's his study; nature is his book;"

but I fear in the main his mental faculties are rarely sufficiently developed to enable him to reap much profit from the study of the fields or of nature. Beyond his wife and children, and the few of his own mental standard, the animals he tends are his associates, and he lives and dies almost debarred from intellectual development. The agricultural labourer, therefore, is peculiarly an object for the thought and consideration of the promoters of instruction amongst the poor. For him I see little help, except through village lending libraries, if established by the country gentleman, like those of the Hants and Wilts Adult Educational Society; but chiefly his help must come from the itinerant book hawkers, designated by the French "colporteurs," I presume from carrying their packs upon their necks or shoulders. The books so hawked must necessarily be very cheap to be within the reach of the agricultural labourer; and of what vital importance it is that the information they are capable of imparting should not only be useful, but harmless; while it is to be feared the present supplies by the hawkers stand in opposition to the latter category. Is it not an object, therefore, worthy of the Society of Arts, and in keeping with its other labours, to organize a system of supply to hawkers, of selected and cheaper books for the agricultural classes, for self-study and improvement, with the possible result of the Society finding itself applied to for examiners to grant certificates of intellectual competency to members of a class who have hitherto rarely aspired to any other distinction than that of being good farm-servants?

There cannot now, I think, be a doubt entertained of the advantage of the Mechanics' Institutions of Great Britain; but these advantages were susceptible of a further and practical development, and that, it appears to me, has been applied by the Society of Arts. Very many of the mechanics who read in the libraries or attended in the lecture-rooms, did so with a genuine desire for self-improvement, with a latent hope, possibly, of bettering their condition, but destitute of the chance of their useful acquirements becoming known to any parties, who might desire to use them. Many operatives, also, no doubt, would gladly tread in the same track, with a very slight stimulus applied to them, either to commend their labour or to move their pride. That stimulus, with great propriety, and, I trust, ultimate public advantage, the Society of Arts has applied, for the first time, in the last year, in the form of an invitation to members of Mechanics' Institutions to undergo examinations, by Examiners appointed by the Society, for the purpose of obtaining a certificate of their acquirements in branches of knowledge in which the mechanic himself might desire to be examined. With this certificate in his hand the operative could confidently offer himself for employment, and upon such certificate the employer could confidently take advantage of his services. I entertain sanguine expectations, that the prospect of obtaining such a certificate, which, in fact, will be a passport to service, will have an early and beneficial effect upon a considerable portion of the operatives who belong to Mechanics' Institutions; that there will be a new-born zeal for acquirement; that emulation may arise, and that the languor which threatened to pass into indifference may change into an active pursuit of those various branches of knowledge which the libraries and lectures are so capable of supplying.

As an additional incentive to the candidate for examination beyond the honourable certificate of competency which he might obtain, the Council have thought it desirable to institute money prizes; and many liberal members of the Society have come forward with contributions to form a prize fund, a list of whom will be read to the meeting, and further subscriptions are invited. To work out the examinations to their legitimate objects, the Council, through deputations, waited upon the heads of some of the Public Departments of the State, in the hope of one or more of the minor situations in a department being reserved as prizes for those candidates who had obtained the highest-class certificates. The late Mr. Wood, Chairman of the Board of Inland Revenue, was considerate enough to place at the disposal of the Council, as prizes, a couple of situations in his department. His unexpected decease has, however, deprived the Council of these rewards for competent candidates; but the Council will still indulge in the hope, that the heads of departments will not be wanting in the desire to aid in their laudable efforts to stimulate self-instruction in manhood.

The Society of Arts, at present, is necessitated to confine itself to two centres of examination, one in London, and one at Huddersfield. The Society is indebted to the gratuitous aid of many able and distinguished men for their services as examiners, and the establishment of more centres of examination at present would impose upon those benevolent gentlemen an amount of labour, and subject them to an extent of inconvenience which the Council of the Society could in no wise deem themselves justified in asking for. The time will come, it is to be hoped, when the funds of the Society may permit of the employment of gentlemen who will accept remuneration for their labour, and, at that period, the operatives can have local facilities for those examinations which the Council trust will give strength and permanency to Mechanics' Institutions, and make them auxiliary sources of supply of that practical intellect upon which the Arts, Manufactures, and Commerce of all nations must depend for success.

The Secretary then read the list of contributors to the fund for prizes to successful candidates at the Society's Examinations to be held in London and Huddersfield in June, 1857, as follows:—

	£	s.
The Society of Arts	105	0
Anonymous	10	0
Francis Bennoch, Esq.	10	10
Rev. Dr. Booth, F.R.S.	10	10
William Brown, Esq., M.P.	10	0
Thomas De la Rue, Esq.	10	10
Warren De la Rue, Esq., F.R.S.	10	10
C. Wentworth Dilke, Esq.	10	10
Peter Graham, Esq.	10	10
The Dean of Hereford	10	10
Henry Johnson, Esq.	90	0
J. Bennet Lawes, Esq., F.R.S.	10	10
The Master of the Mint	10	10
J. J. Mechi, Esq., Sheriff of London	10	10
Samuel Morley, Esq.	10	10
General Sir Chas. Pasley, K.C.B.	5	0
R. Stephenson, Esq., M.P., F.R.S.	10	10
Col. W. H. Sykes, F.R.S., Chairman of the Council	10	10
G. Fergusson Wilson, Esq., F.R.S.	10	10
Bennet Woodcroft, Esq.	5	5

The medals awarded at the close of the last Session were then presented.

The Secretary announced that at the meeting of Wednesday the 26th instant, the following paper would be read:—"On Indian Fibres," being a sequel to "Observations on Cordage, Clothing, and Paper Materials," by Dr. J. Forbes Royle. On this evening, J. Griffith Frith, Esq., will preside.

HONORARY LOCAL SECRETARY.

The following gentleman has been appointed Honorary Secretary for Mirfield and the neighbouring district:—

Charles Wheatley, Esq., Mirfield.

MEN AND MANUFACTURES.

By W. Bridges Adams.

I have carefully read Mr. Chadwick's address to the Philanthropic Society at Brussels, on the question of labour and machinery, and it seems to me that his political economy, though true as far as it goes, with respect to machinery bettering the condition of the workman, as well as general humanity, yet by no means takes in the whole scope of the question. It is rather a special pleading in favour of special Lancashire cotton-spinning, dating—so says Mr. Chadwick, from Mr. John Kennedy, and not from Arkwright—than a question how the cotton wants of the British Empire may be best supplied with the greatest happiness to the greatest number.

It is quite true that our first cotton came from India, ready webbed for making into garments, and that the labour of India being beaten by steam labour in England, the cotton was brought raw, spun and woven in Lancashire, and carried back in webs of long cloth and other, to undersell the native manufacturers in the Indian market. And Lancashire spinners and weavers, native and imported from Scotland and Ireland, did earn greatly increased wages during the period of European wars, and the English government took great pains to prevent the exportation of machinery, in order to keep other countries tributary and subsidiary to Great Britain. But their pains were unsuccessful, and cotton mills grew up in France and Spain, Germany, Italy, America, and elsewhere. In many of these countries people were willing to work for such small wages that the English manufacturer was cut out, and where the small rate of wages did not balance other disadvantages in machinery, or where, with equal machinery, as in the United States, wages were high, the governments of those countries eked the matter out with prohibitory duties.

Not wishing to battle this in the first instance by improved machinery, the English manufacturers sought to cut down wages, which would bear reduction. This not sufficing, the power-loom was brought in, and the Luddite riots and frame-breaking were a clear proof that the workpeople did undergo suffering for a time. They had been taught a trade which they could not change for another, and in their rude way they maintained a struggle for employment, by which must be understood wages and food. No special pleading can get rid of this broad fact, even though we know that the "greatest happiness" principle demanded the sacrifice of the minority to the majority. It was an evil to the sufferers, though a necessary evil.

In short, a great exotic business had been created in Lancashire, in which nominally free people became slaves of the mill, as much as black men were slaves of the sugar-cane. A giant capital had been put into machines and mills, and vested interests created, which constantly sought to import, and cheapen, and educate labour. And, though humane manufacturers existed, there were abundance also of hard taskmasters rising from the ranks, familiar with every screwing process, and not more humane than West India planters, whose commercial axiom was, "better to buy than breed." The Lancashire masters needed not to breed. That was done for them in Ireland and elsewhere, as well as by their own workpeople. But, wherever bred, there can be no doubt of one fact, that spinners and weavers were either born or bred a distinct class from the general mass of British people, who gained their living by athletic and open-air labour. They are lower in stature, paler in complexion, more delicate in nervous organisation. And, notwithstanding, they require more and more stimulating food than open air workers—probably for want of assimilating stimulus in the atmosphere in which they work. The atmosphere of the cotton-mill is far from being as pure as the open air, and it is essential to cotton manufacture, at least in the present state of our manufacturing knowledge, to work in a heated atmosphere. In short, to work a cotton-mill in Lancashire, which is a cold and moist climate, we must create a race and an artificial climate analogous to those of Eastern India. It is quite true that amongst the people of Great Britain and its immigrants, we have many people of this class, especially in Ireland—the thin-fingered class, adapted to artistical employments, but they do not belong to the soil or climate; they tend to disappear continually; their lives are shorter, and, as a matter of commercial economy, it is not desirable to "raise," as the Americans call it, a short-lived people. The capital invested to grow them up to twenty-one years of age is sunk for a shorter period of fructification, and consequently at a higher rate of interest. If we could only obtain our clothing by the process of keeping up an artificial weakly class, we might then come to study the question, whether natural materials are not best adapted to the country where they are produced, as furs at the North Pole, wool in the temperate climates, and cotton towards the Equator. But the manufacture of cotton clothing is not necessarily confined to Lancashire, any more than woollen clothing is confined to Yorkshire; and it seems reasonable that the manufacture should go where soil and climate are favourable; where the people are indigenous, and not exotics, and the material is produced and can be produced in any quantities. To bring cotton, raw, from America, work it up in Lancashire by exotic workmen, and sell it in India, is certainly a less economical process than to grow it in India, work it in India by natives, and consume it in India by the general population there and elsewhere.

Economically, Lancashire labours under a disadvantage as compared with India. Lancashire cannot grow cotton —India can, and, it is said, as fine as the American. Lancashire cannot grow men and women, for if she ceased to import them they would disappear in a few generations, *i.e.*, men and women fit for cotton working. India has grown this class of population for ages—they are indigenous, and will go on as long as the climate continues the same. Indigenous Indian workers are cheaper than exotic Lancashire workers, for they require less and cheaper food. The warmth produced by burning carbon in the lungs of the Lancashire exotic, exists abundantly in the Indian atmosphere. What advantage, therefore, is there in keeping up an exotic race of British subjects to spin and weave cotton in Lancashire, while indigenous British subjects to any amount exist in India, better fitted for the work, and who, by reason of the climate, can live on one-fourth the wages.

Mr. Chadwick asserts that "Lancashire has less to fear than ever from the low priced and unrestricted labour and long hours of the cotton manufacturers of other countries;" and that in Austria thirteen-and-a-half-hours does not get more produce turned off than ten-and-a-half hours in Manchester. Very possible. But I doubt the fact, with equal machinery in both cases. Long habit has made machine improvement in Lancashire a day-by-day process; and there is little doubt that it is to this fact of the indigenous skill of Lancashire in metal-working and machine inventing, that the advantages are owing rather than to the workers of the machines. Year by year, as profits get wire-drawn, so goes on invention to balance it, Lancashire excels India because she has machines and inventors as well as educated workmen. But if India had the machines and inventors, with the workers of the machines at one-fourth the wages of Lancashire, the freight from India would not be an impediment to prevent British subjects in India from beating British subjects in Lancashire out of the home market with cotton webs.

And this must eventually come to pass. The opening up the country by railways will stimulate the growth of cotton. The growth of cotton will in time lead to the import of machinery from Lancashire into the Nerbudda districts, where coal and iron abound, and where cotton also will abound. The machinery of cotton mills is precisely the kind of machinery which Indian handicraftsmen—sword-cutlers and others—will know how to repair; and by quicker or slower process cotton-spinners and weavers will decrease in Lancashire, and machine-makers will increase with indigenous energy, while in India cotton-spinners and weavers will grow and multiply. Production will thus be greatly increased and art lessened.

And the Indian staple of manhood and womanhood will not be deteriorated, but improved, by constant increase of better work. And Lancashire people, changing from the cotton mills to the forge and metal working, will betake themselves, the men to work and the women to the domestic cares of their families, with a much larger sphere of happiness than in the present processes, wherein men, women, and children work in the mill together, guiltless of all knowledge of the domestic arts, knowing nothing but how to spin and weave cotton, and in short times wearing ragged garments from absolute ignorance of the knowledge how to mend them.

And not the least amongst the advantages will be the increase in the numbers of a fine physical race of men, fitted to do battle for freedom, if need be, against the continental chattels of centralisation, a process that makes and protects grown children but not men. I like not the condition of humanity similar to that of elder Thebes, the glory of which rose and set with Epaminondas and Pelopedas. A central Solon, doing all things for his people, and leaving nothing to be done by themselves, would put them into the exact condition to be undone by a tyrant or a fool—a Nicholas or a Bomba. Municipality may induce much folly, much roguery; but wisdom and honesty may also exist in sample and in competition. But, alas, for the centralisation that can only set forth one example, and that a bad one.

Let us, however, have no misunderstanding. I do not wish or propose that our whole people should consist of fair-haired and blue-eyed giants. No truth is more certain than that all human beings are born with peculiar aptitudes, all useful if applied to fitting purposes, and sometimes very mischievous if misapplied. The brawny Saxon tills the ground, and drains the bog, and builds the house, the shop, and the steam-engine, and the road and railway; he makes the rough places smooth on the land, and furrows the tracks of ocean with his great broad business-like hand, that wields the spade, and the axe, and the hammer, and holds the tiller and wheel with a grip like that of a vice. But the more delicately organised Celt, with nerves like lute-strings and not like cart-ropes, gives us the poetry of life,—music, painting, sculpture, architecture, and the infinite variety of things cognate to them. Without the Saxon navvies, we might perchance *build* temples, but we should *dwell* in wigwams and bothies. Without the Celt, we should dwell in barns, guiltless of all art save that of the beaver-made construction. The Saxon element conquers and governs; the Celtic element adorns; and therefore is it that France, indigenously a Celt producing country, sometimes makes colonies with ornamental appliances but no substructure. Lacking the instincts of government to follow up the conquest of enthusiasm, there is no permanence, and therefore Canada and other colonies fall into English hands; and thus, if the genius of disorder for any length of time plunges France into trouble, her colony of Algiers, left to itself, may again become a nest of pirates and a pest to the Mediterranean, in which case it will have to be conquered and governed by England and her ocean police, and what can be made to grow out of it according to its natural capabilities will then be seen.

The union of Saxon and Celt, or other cognate races, with climate and soil superadded, makes Englishmen, probably as Rome of old was made by constant provincial aggregation and absorption. But this union will not make cotton spinners and weavers such as are desired by Lancashire mill-owners. Physical strength is clearly in small demand, else, why resort to shoals of women and children. Quiet, gentle, docile people, partaking more of the nature of women than of men, indisposed to riot or rebel, obedient as the machine to the hand of the engineer, soft and silky as the cotton they help to form into threads and webs, are the mill-owners' human staple.

We can, doubtless, produce and mould such people, and by following the farmers' examples, do it more effectually than has yet been done, by selecting the stock, instead of taking it at random. We might even do something to make them longer-lived, by expending more coal, and driving currents of warmed air through the mills, and taking thought for healthy dwellings for them when they leave the mill to sleep or eat. But in a Lancashire climate they must work in enclosure. God's own wind cannot play upon them, laden with all the health-giving influences of nature, and they will be etiolated and monotonous—they will not be a people of joyous temperament, finding pleasure in mere vitality, the mere act of living. The incessant drowsy hum of wheels will infallibly check exuberant impulses, will act, as a "governor" on their nerves, till they become as a part of the machine they tend. They are artificial beings, and not humanity in its whole sense.

Mr. Chadwick says, "moral character and trustworthiness must now be sought to work valuable machines." Quite true; but a very low order of clockwork morals and regularity, compatible with "doing no wrong," and also compatible with the exercise of no virtue in the high sense. Morals, in mere abstract political economy, have reference chiefly to absence of waste and absence of thieving. A man in whose mind there never sprung up a single impulsive generous emotion, a mere dull duty grinder, to look upon whom is an opiate, reckons in mere politico-economical logic as highly as the man whose soul is cast in heroic mould.

It is still a world of strife; and in a wider political economy, the hero still counts for much. He is the assurer of the worker—the guarantee that the wealth of the worker shall not be taken away by fierce tribes of barbarians lurking in civilised garbs. He is the upholder of that freedom which alone induces profitable work, and the absence of which may account for the lessened result of overtime labour. The turn-outs and strikes, viewed from this aspect, are not altogether losses, but wholesome stimuli as well, and we can conceive a state of things in which docile people might be kept by shrewd, calculating (and not cruel) masters in a condition to give the maximum of production, without any exertion of energy tending to raise them from the ranks,—nominally free men, as the dog or cat is free, but under the necessity of seeking a master for daily rations, without any choice between one master and another, all in dead level, and a universal equality of rations. I should certainly not covet to be either master or man in such a community.

In a large political economy, then, the question must occur, as to what are, not merely the possible employments, but what are the best employments for a nation having regard to the attainment of a generally elevated manhood, and what are the trades which should be discountenanced. If it could be proved that any particular trade tended to make the particular employers wealthy, and to spread a damaging pauperism over the community, it would be quite as competent for the State to prohibit such trades, as it does the kidnapping of girls for infamous purposes. Without, therefore, disputing the advantages that have economically accrued to England by a long monopoly of the trade of spinning and weaving cotton, the question now is, whether it is worth while cultivating a mere competitive trade with low-priced labour, at the cost of breeding and increasing a race physically inferior in general humanity to what might be kept up by adhering to more indigenous employments, the more especially when we have in India men without limit, the natural growth of a soil and climate peculiarly adapted to the spinning and weaving of cotton; and the more especially, when all Lancashire may ultimately be employed in producing the machinery for cotton-spinning, just as Switzerland produces watches.

I am not proposing to pull down Lancashire cotton-mills, but simply pointing out that a time is nearer at hand than is generally supposed, when the exotic trade originally imported from India to Lancashire, and protected by circumstances for a long period of years, must, by force of natural circumstances, again return to India; and that, so far from this being a cause of regret, it should be a cause of rejoicing, for it will improve the general staple of humanity in England, and render every human body and mind therein the recipient of a larger amount of comfort and happiness. I should like to see the time when every man in England could be a soldier, perfect at all points—not necessarily a soldier, but practically able to be so if required, with a national motto, "*Nemo me impune lacessit*," and not the Scottish thistle, with the arrogant "Wha daur meiddle wi' me?" which almost seems a version of the Irish invitation, "Will any jantleman thrade upon me tail,"—but the wholesome blooming briar rose, beautiful to eye and nostril, yet drawing blood sharply from the rifling hand seeking rudely to rob its blossoms.

While writing the above, Mr. Chadwick's phrase, "It was an aphorism of the father of the cotton manufacture in England, Mr. John Kennedy, of Ardwick-hall, lately deceased," has been puzzling me, for I have always understood that there were two fathers: Arkwright, who invented the "throstle," and Crompton, who afterwards invented the "mule." There was a Mr. John Kennedy, a worthy, painstaking Scot, who wrote a book, after making a large fortune; and he states in that book, "I came from Scotland as a mechanic, barefoot, to *learn cotton spinning* in Manchester," or words to that effect, but I shall have the book shortly, and will quote more accurately.

Now, this Mr. John Kennedy was a manly-minded man, without vulgar pride, who was utterly above the meanness of seeking to appropriate other men's reputation. He possessed portraits of all the chiefs and leaders in cotton, and descanted on them from time to time without hinting at any peculiar merit in himself. Now, is this the same Mr. John Kennedy alluded to by Mr. Chadwick? If it be, this looseness of statement in a paper of statistics gives an apocryphal air to the whole. Perhaps Mr. Chadwick will give us a short biographical notice of the Mr. John Kennedy he alludes to, as a question of historical accuracy, to put his paper on a proper footing.

I shall be glad if the editor will forward a copy of this to the *Moniteur*, in which Mr. Chadwick's paper was published. It is a subject which can hardly be too much discussed, and the acute French intellect will readily understand that man in the abstract is not a mere politico-economical syllogism, to be reasoned upon after the farmer fashion, sacrificing all other ovine qualities to the one consideration of producing good mutton—or cotton.

THE WORKING CLASSES OF EUROPE.

As the pages of the *Journal* contained, some months since, an analysis of a volume on the condition of the Working Classes of Europe, published last year at Paris, by M. Le Play, Councillor of State, under the title of "*Les Ouvriers Européens*," it may be interesting to the members to know a few particulars concerning the success of that publication, probably the most complete ever brought out on this branch of social economy so intimately connected with the advancement of manufacturing and commercial industry.

It is a fact not easily to be accounted for, that in England, where the importance of the subject is generally so well appreciated, M. Le Play's work has excited comparatively little attention. In France, the sale of the work has far exceeded the expectation of its author, and more than 200 copies have been disposed of in other continental countries, to say nothing of orders received from more distant parts of the world, whilst the bookseller, Mr. Jeffs, of Burlington-arcade, the appointed agent for this country, has scarcely an order to report.

To those persons who may have been rather deterred by the size of the volume than attracted by the typographical perfection with which it has been got up at the Imperial Printing Office, it may be useful to learn that an abridged resumée of M. Le Play's System of Research has just been published, in the form of an octavo pamphlet, by M. Augustin Cochin, the eminent French philanthropist.

In pursuance of a report drawn up by M. Dupin, the French Academy has awarded to M. Le Play the Montyon Prize for 1855, with an invitation to continue his statistical investigations; and in furtherance of these, a special society has just been formed, under Imperial sanction, of which M. Le Play himself has consented to become honorary secretary.

One of its purposes is to grant pecuniary rewards to persons in France and other countries, who may send in essays on the local condition of the working classes, framed in accordance with the directions contained in the Society's statutes. Of these, copies have been deposited for inspection at the offices of the Society of Arts, Adelphi, and of the Statistical Society, St. James's-square.

THE WELLINGTON MONUMENT IN GUILDHALL.

This monument has just been erected. The finishing touches, however, have not yet been given. It consists of a group of three colossal figures, representing the Duke between peace and war, and a relievo, introduced below, of the Battle of Waterloo. It contains about 20 tons of white Italian marble, and has been executed in two years, at a cost to the City of £5,000. Mr. Bell, from whose studio it proceeds, was on the Council of the Society of Arts during the two years prior to the Exhibition of 1851, when that scheme was agitating. At the request of the Society he also prepared its manuals of freehand outline, and he is now one of its Board of Examiners.

A NEW CYPHER.

The Secretary has received the following specimen of a cypher, invented by Mr. N. G. Wilkins, of 27, St. Peter's-road, Mile-end, who desires the opinion of those versed in such matters as to its merits:—

280 R . 112 A 25 Y

The inventor states that the above is a short dissertation (about 100 words) on the subject of the cypher; that it was written in about ten minutes, and with the aid of the key may be translated in about six minutes, though he considers it impossible to decypher it without such assistance.

Home Correspondence.

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BESSEMER IRON.

Sir,—When I wrote my remarks on the subject of the "Bessemer Process," which appeared in your Journal of the 31st ult., I thought I had expressed myself clearly, candidly, and temperately, but it appears your correspondent Mr. H. W. Reveley has strangely misunderstood me, and he does not hesitate to impute motives, both to myself and to manufacturers generally, which ought to be disclaimed as being unworthy of the present time.

I am sure it is not true, that either the leading practical men, or the manufacturers generally of this great country, which derives its foremost position from its zeal for improvements, both in the arts and sciences, have, as he asserts, "*a deep-rooted antipathy to all changes;*" nor is it correct that they are influenced by such unworthy motives as to combine to defeat any man's improvement, because such individual may have secured it to himself by patent; much less is it possible that the iron trade could abstain from adopting, even at a great cost, (however disposed to do so, as has been imputed to them,) any mode in making iron or steel which would produce a saving of 40s. per ton, as it was asserted by Mr. Bessemer would be the result of introducing his process. That which all manufacturers who know their business oppose, is the dictation of men who, being mere theorists and experimentalists, have the assurance to try to teach those whose whole attention has been directed to acquire a knowledge of their own business,—teachers whose confidence in assertion is greatly *pro rata* with their ignorance. Imagining themselves to have something new, and something excellent, but very partially understanding the true nature of what they may be dealing with, they jump to conclusions which the more experienced readily see to be erroneous; and, prompted by men more ignorant than themselves, they do not hesitate to condemn those of whose judgment and knowledge their own is but a bare reflex at the best, and generally so imperfect as only to distort, nay, not unfrequently to imperil, the truth.

My friend Mr. Hall, whose B.B.H. iron is known everywhere as superior, and whose make cannot be less than 1,000 tons per week, has offered to give a large sum for Mr. Bessemer to distribute among the public charities, if he will either excel him in *quality* or *economy*, and has also offered every facility for Mr. Bessemer to apply his process at the Bloomfield works, a challenge as fair as Mr. Reveley could desire; but a life-time of experience has already shown Mr. Hall all that Mr. Bessemer has done, and much more than he has yet produced.

Away, then, with the notion that the ironmasters are unwilling to adopt improvements; nay, it is essential to their existence to encourage them; and the fact that so many came from all parts to see, at Baxter-house, Mr. Bessemer's experiments, proves how ready they are to examine every attempt towards improvement, but which is (in this quarter at least) yet to come, as I said in my last, "from something still unspecified."

Having satisfied Mr. Reveley, I trust, on this head, I will now simply again put forward Mr. Bessemer's proposal as it was given to me:—"That his process was to make malleable iron of pure quality direct from the pig, *was to save the forge process*, by enabling the manufacturer to roll the ingot or product of his furnace at once into the bar, or rail, or plate, as required." Thus, a saving of 40s. per ton was to be achieved, and not only so, but the quality was to be more equal and pure than is attained by any mode of operation previously known or at present practised.

By putting aside the whole forge process, viz., the necessary fuel and use of the puddling furnace, the shingling, rolling in the forge, and piling for the mill, no doubt such saving would accrue; therefore, any such proposition could not possibly be overlooked by the trade, as every individual interest would be involved, and necessitate its universal adoption, if only once introduced. But none of these, however, have yet been set aside, as insuperable objections are discovered and noted by the ironmasters in the proposed plan; indeed, on examination, it will prove to be more uncertain and more expensive than the method in common use.

Mr. Bessemer has done nothing more than is the result of Mr. Martien's patent, and it is questionable whether the process of the latter can be used with advantage; while it is less pretentious, as it does not attempt to do away with the forge process, but only to purify and economise in a moderate degree.

I could give a full detail of the ordinary process of manufacture, and point out where the difficulties of these inventions must arise, but it would be too extended for a mere letter, as it would embrace so many points of interest, that, to do it justice, it should rather take the form of a paper for your Society, than appear among your correspondence.

I am, &c.,

THOMAS M. GLADSTONE.

11, Austin Friars, Nov. 11, 1856.

WROUGHT IRON.

SIR,—The various processes now under discussion for the conversion of crude cast iron, are all, without exception, a revival of the Catalan forge under different circumstances and adaptations, and it may not be perhaps without its use to give a short account of that ancient and still practised method of producing bar iron, as well as to show at the same time the identity of the processes both old and new.

The Catalan forge is merely a common smith's hearth on a very extensive scale, furnished with a powerful water-blast of not much less than 14 lbs. to the inch. The blast is produced by two or more old-fashioned blowing trunks, simply set in action by a fall of water from 20 to 30 feet in height. The hearth of the forge is very long, with a pool or basin immediately under the blast, and the tuyère, or nozzle, points downwards to the centre of the basin, at an angle of about 45°.

A large quantity of chesnut wood charcoal is piled upon the hearth from end to end, and supposing the fuel ignited, the ore, as it comes from the mine, about three or four bushels at a time, is thrown on at the further end, in order to be gradually roasted as it is slowly stirred onwards to the more heated portion of the fuel, where it ultimately falls into the basin in the form of fluid cast-iron. After the lapse of ten or fifteen minutes, occupied by the fireman in stirring the melted mass with a long iron bar, it becomes converted, by the combination of an intense hollow fire with the powerful water-blast, into a rough ingot or ball of malleable iron, which is hooked out and slipped under the water hammer, where it is drawn into commercial bar iron. No flux whatever is used with the ore, but water is abundantly sprinkled over the outside of the burning mass of fuel in order to prevent useless combustion and concentrate the heat where most wanted. For finer descriptions of bar, the first make is faggoted as usual, and again drawn out until it has acquired its ultimate state of toughness and tenacity. Who cannot see the identity of the action of the Catalan forge with the puddling and finery processes, as well as with those of Bessemer and Martien? In the old method the smelting, puddling, and finery operations are all performed at one and the same time, as well as continuously, as fresh ore and fuel are added as fast as they are removed or consumed, so as to lose neither time nor heat; and though the operations may appear to be on a small scale, as they are continued day and night without cessation, the produce is large, and direct from the ore without further manipulation.

In Bessemer's and Martien's processes, the blast is upwards; in the Catalan forge, downwards; but the result is the same, for the water blast is sufficiently powerful to penetrate the melted and well-stirred mass, and to convert it from crude cast-iron into malleable bar.

I am not prepared to speak as to the relative economy of the Catalan process, but may observe that it requires a very small capital to set up, beyond the necessary water power.

In regard to the properties of the water blast, I can state from the experience I have had of two high smelting furnaces in the same works, and under similar circumstances, with the exception of one being worked by the water blast, while the other was supplied with the dry blast from an engine, that when malleable iron was required, the pig from the water blast was infinitely superior to that produced by the dry blast, and that when fine soft pig for casting was wanted, the latter had greatly the advantage, but no sharp castings can be made from charcoal furnaces.

The position of the tuyères has also great influence on the quality of the pig. When they are inclined downwards towards the centre of the hearth, as in the Catalan forge and water-blast high smelting furnaces, white hard pig is produced, but when they are horizontal, soft grey pig is the result.—I am, &c.,

HENRY W. REVELEY.

Poole, Dorset, Nov. 10, 1856.

AMPHIBIOUS CARRIAGES.

Sir,—Mr. Bourne having applied to me for drawings of Sir Samuel Bentham's amphibious carriages, my attention has been drawn to the navigation of the smaller rivers of India, and I herewith trouble you with a copy of my letter to him. I had also informed him that Sir Samuel had found no difficulty in steering the jointed vessels he invented.

"A principal objection to the navigation of the lesser rivers of India, is that they are liable to have their course obstructed by rocks and rapids. It has, therefore, occurred to me that this difficulty might be obviated by constructing a short railroad at such places to convey the boats themselves, without unloading them, and resuming navigation when the rocks and rapids should be passed. It would be easy to keep a supply of wheels at each station, so that the navigable vessels should not be encumbered by them, and the wheels might speedily be attached, as was proved in the instance of Sir Samuel Bentham's amphibious carriage. No engineering difficulty or costly works would be required for a kind of dock at each station, where the boats might be hauled on to the rail. In some cases the force of gravitation might be made available by the descending boat and cargo drawing up the ascending one."

I am, &c., M. S. BENTHAM.

26, Wilton-place, 10th November.

STENOGRAPHIC MACHINE.

Sir,—As I am not aware that any stenographic or shorthand machine has ever been constructed or invented, the following description of such an effort may not be uninteresting as a preliminary to a fuller development of the contrivance. The most essential conditions for such a machine, are quickness and precision; so that the slowest as well as quickest speakers shall have, not only their speech, but their idiomatic peculiarities and manner of delivery clearly represented, as nearly as art can do it.

A stenographic letter or type machine will never accomplish this, being of a mechanical nature, and not possessing the expression of sound, if I may so say, in its arrangement. I constructed two different machines on this principle some months ago—and although considerable dexterity could be acquired in their manipulation, I did not think the plans good enough for further prosecution. I therefore reflected on the suggestion, that all speech is the result of motional arrangement—chiefly of the tongue and lips; and that the articulation of different words required a corresponding change in muscular motion. I naturally concluded, if access could be obtained to these speech-producing motions, they could, by mechanical means, be transferred to paper. This transfer I partly effected in the following rough way:—I got four pieces of plane-tree, one for the chin, one for each lip, and one for the tongue. Each of these pieces I had thinly cut and formed to suit their respective places. That for the tongue was, as I foresaw, most difficult to arrange; however, I did arrange it so as to produce motion, though imperfectly. To each of these pieces I had a thin piece of slightly elastic thread passing round the head, to keep them in position when acted on by the organs of speech. To each of these pieces I had jointed four other long pieces of about eight inches respectively, and not quite so thick as an ordinary penholder. That, of course, for the tongue at its extremity, was made much thinner, so as to work with as little obstruction as possible. About half-way, or at the distance of four inches from the mouth, these small rods passed or worked freely through jointed sockets, fixed in suitable bearings, and connected at their ends to the ends of four other longer rods, of about eighteen inches in length, and placed at right angles to the smaller set, the ends of each being connected by joints. These joints are loose. At the distance of fifteen inches from these joints are four universals, fastened in proper frame work, in which these longer rods are securely fixed. To the unattached ends of these latter rods are the four pointers or tracers, which trace the motions made in the articulation of speech.

It may here be observed, that none of these natural motions are straight, but each word forms a combination of curves, proportioned in their size to the vehemence or lowness with which the words are uttered.

The tracers are placed in sockets, to which are attached small helical springs; from each of these tracers is a small wire, fastened to a string, by which the speaker lifts the pencils from the paper at the termination of each word or syllable.

The pointers must have small adjusting springs to keep them in position, before and after using. The head is to be kept steady in speaking, so as to give regularity to the written or traced lines. The method of trial which I adopted was extremely simple—consisting of two slides or guides for the carriage, on which was fastened the tracing paper—a long screw, a spur wheel, catch and handle. At each word or syllable I moved a tooth. And although the motions were not well defined, from the loose construction of the machine, they were sufficiently satisfactory to establish a belief, that if a machine were perfectly constructed, and regularity given to the motion of the carriage by further mechanical arrangement, the pointers being so adjusted as to give clear room for the movements of each tracer, so that they need not be lifted until the completion of each word, or not at all, it would give not only the time taken in uttering a speech, but also the time and nature of accent on each word or sentence. The practised ear, by means of the *stethoscope*, can readily detect the unhealthy affections of the lungs; so I think as readily may the practised eye detect the peculiarities of words and speech (to coin a word) by means of the *vocalagraph*.

The chief difficulty will be in obtaining correctly the motions of the tongue. To obtain them correctly may be an insuperable difficulty—yet they may be obtained with sufficient accuracy to give a varied form to the expression of each word, which is all that can be required. If one linguadental tracer be not sufficient for the purpose, one or two others might be added, with small horizontal pieces attached for the tongue. The larynx, vocal chords, and guttural and nasal sounds I have not considered, as I think they will be found more useful in the modulation of tone, than in the formation of speech. Walker, in his "Observations on the Greek and Latin Accent," says, "But till the human voice, which is the same in all ages and nations, is more studied and better understood, and till a *notation of speaking sounds is adopted*, I despair of conveying my ideas of this subject with sufficient clearness." He afterwards expresses his conviction that the ancients had a notation of speaking sounds, and states that he had formed one for himself, and that he hopes some one will be able to unravel this mystery in letters, which has long been the *approbrium et crux grammaticorum*, the reproach and torment of grammarians.

I am yours, &c.,
THOMAS ALMGILL.

Manchester, Nov. 17, 1856.

INDESTRUCTIBLE NATURE OF FERNS.

Sir,—Ferns are said to withstand the effects of even a very prolonged immersion in water, with scarcely any change, whilst not only the soft tissue of plants, but the heart wood of trees, decays so completely under the same circumstances, as to leave little or no traces of their character.* Have any experiments been made to turn to account the above cited property of Ferns, whether for admixture with water cements, formation of durable cordage or tissues, and with what practical results?

Information on this subject will oblige, Sir, yours, &c.,
GEORGE TWEMLOW,
Colonel Royal Artillery.

Vegetable Physiology and Botany, p. 29.

EXAMINATIONS.

Sir,—It was with a feeling of considerable regret that I read in the Society's *Journal* of last week that no certificated schoolmaster would, henceforth, be permitted to attend the Society's examinations.

No doubt the Council had weighty reasons for coming to such a decision, but I would beg permission, nevertheless, to point out a reason why I think it would be productive of good if they were to waive that decision with regard to *one* particular subject of examination. The subject I allude to is *chemistry*.

It may be the opinion of the Council of the Society of Arts, that as the Committee of Privy Council on Education hold *special* examinations for masters in this subject, there would be less excuse for admitting them to the chemistry paper than for other subjects not recognised by the Committee of Council. And so indeed there would, if certificated schoolmasters, who have worked up this extra subject, could present themselves at the Government examination in chemistry at their own pleasure; but this is very far from being the case. No certificated schoolmaster in charge of a school can present himself at such examination without *the consent and recommendation of a majority of the committee of his school.* "But surely," you will say, "there can be no difficulty in obtaining that." How many masters would rejoice with me if it were so! But so averse are the majority of school managers to the introduction of anything like *experimental* science into National Schools, that there is scarcely one school in a dozen where the master would be allowed to attend the examination, which, if successfully passed, would qualify him for the use of apparatus, a grant of which would be made *to the school* on his account at one-third the cost.

In a large school, of which I was master two years back, I not only offered to attend the examination, but actually offered one-half the money towards purchasing the apparatus, so that the managers would have had to pay but one-sixth of the cost, and even then I was refused permission to attend. I have, also, frequently met with masters in the same, and even worse circumstances. Only a fortnight back I was assured by a friend that he had offered to attend the examination and to pay the *whole* of the managers' one-third for the purchase of the apparatus—which would still have belonged to the school and not to himself—but so *wisely* were they convinced that it was not good for boys to be educated by means of which they had neither the time nor perhaps the capacity to learn the value, that they refused his request though the apparatus should cost them nothing.

Such instances as these being the rule and not the exception, I trust the Council will consider them a strong plea for waiving the exclusion of certificated schoolmasters from their examination in chemistry, or at least all those who cannot attend the government examination. Those who have *passed* the government examination in chemistry will scarcely wish to be examined, but the Council of the Society of Arts will be doing a friendly office for others, as it has already done for me, by putting "its stamp" upon the knowledge of those who—having obtained it—have been refused permission not only to apply it, but to have it legitimately acknowledged.

I should feel greatly obliged by your laying this before the Council.

I am, &c.,
JOHN JONES.

London-road, Reigate, Nov. 1st, 1856.

Proceedings of Institutions.

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Bolton.—The Committee, in presenting the Thirty-first Annual Report of the Mechanics' Institution, regret that during the latter half of the past year the support accorded to the Institution has been such as to contrast unfavourably with that which it received in the preceding portion. The number of general members entered, which was for the first quarter of the past year 373, has only amounted in the last quarter to 207. Notwithstanding this, however, there is on the whole year a decided increase over the year preceding. The number of Honorary Members subscribing during the past year has amounted to 92; and the number of general members entered has been an average of 294 in each quarter. The number admitted by transferable cards has been 60, making an average total of 440. Compared with the previous year there has been an increase of 31 honorary members, 101 general members, and of 16 in the number admitted by transferable cards, or a total increase of 148. From the financial statement it appears that there has this year been an addition of upwards of £35 to the debt existing at the close of last year. On the whole, however, the Committee do not think there is much reason to despond, or to fear that the Institution will not recover from its present partial depression. The Library has this year received considerable additions, both by purchase and by donations. The total number of volumes purchased during the year has been 143. Seventy-five volumes have also been added by donation. The number of volumes now in the Library is 4,504. In the deliveries there has been an increase of 1,292 over those of the year preceding. The Classes in operation during the year, with the average number of members, have been as follows:—Writing and Arithmetic, junior section, 66 members; Writing and Arithmetic, senior section, 32 members; Mechanical Drawing, 22 members; Landscape Drawing, 9 members; French Language, 10 members; Reading and Elocution, 14 members; Chemistry, 12 members; Mutual Improvement, 13 members; Essay and Discussion, 36 members. Total, 214; or an increase of 88 over the number attending in the previous year. Two lectures have this year been delivered in the Reading-room; the first by the Rev. Richard Boyle, on Shakspeare's "Merchant of Venice;" the other, on the "Study of the French Language," by M. A. Podevin, teacher of the French Class at the Institution.

Brigg.—On Monday, the 6th inst., the tenth annual general meeting of the members of the Reading Society was held in their reading-room, W. Brocklesby, Esq., in the chair. The report of the committee for the past year, which was read by the secretary, showed that the Society continues in a very prosperous condition, having at the present time, besides honorary members, 203 proprietary members, whose subscriptions for the past year amounted to £100 12s. 6d.; that the library now contains 922 volumes, of which 92 have been added during the year; that 13,040 entries were made in the librarian's register of the circulation of books, periodicals, and newspapers, between the 31st August, 1855, and the 1st September, 1856, being an excess of 2,710 entries over any previous year. The treasurer's statement showed a balance in the Society's favour of £22 5s. 3¼d. The following gentlemen were appointed as the committee for the ensuing year, viz., John Hett, Esq., president; John Danber, Esq., vice-president; Mr. John Hewson, treasurer; Messrs. S. Upton and J. Parker, secretaries; and Messrs. W. Brocklesby, Thos. Freer, W. Nicholson, J. B. Moxon, Wm. Hart, H. T. Jackson, J. Lofley, G. Lofley, and Thos. Mason. The propriety of establishing classes in drawing and other important branches of knowledge, for the benefit of the junior members, and with a view to enable this Society further to participate in the advantages of union with the Society of Arts, was considered, and the committee for the ensuing year were requested to take all necessary steps for instituting such classes as early as it can be found practicable to do so. The sum of £10 out of the balance in the treasurer's hands was directed to be expended in the purchase of a further supply of new books. Votes of thanks were given to the officers of the past year, and after the transaction of other general business, the members separated, well satisfied with the success which has continued to attend the operations of the Society.

Cheltenham.—Courses of lectures have been commenced, and are fully attended, both at the Literary and Philosophical Institutions and the Athenæum. Among the lecturers engaged are Dr. Lankester, the Rev. H. Christmas, F. R. Bennett, Esq., P. L. Simmonds, Esq., and Mr. Balfour; and gratuitous lectures have also been delivered by Dr. Humphreys, of the Grammar School, and other friends of educational progress.

Huntingdon.—A meeting took place at the Literary and Scientific Institution on Friday evening, the 7th inst., for the purpose of elucidating some views tending to advance the education and instruction of the young men of the town in the useful sciences, in order to qualify them to become candidates for the prizes offered by the Society of Arts. The chair was taken by Michael Foster, Esq., the president, who stated the advantages which were likely to arise to those who would systematically undertake the studies which would enable them to put themselves in competition with those who were desirous to obtain appointments to public situations. He remarked that the system of obtaining places by patronage was now happily on the decrease, and it was by talent alone that for the future men could hope to attain to official situations; the East India Company, amongst others, had thrown their immense patronage open to public competition, and almost one of their first appointments, under the new system, worth £1,200 a year, had been given to the son of a tradesman of Royston. He saw no reason why the young men of Huntingdon should not make the attempt to obtain some of the prizes, which were within the reach of all who had talent and energy to qualify themselves for the ordeal. Mr. Honey, of Cowper's House Academy, explained at length the various branches of study in which young men would have to be examined—such as chemistry, mathematics, natural philosophy, and other sciences, for which the Society of Arts offered prizes varying from £25 to £10, besides giving certificates, which carried with them a recommendation to almost any situation for which the holder might become a candidate. For himself, he was ready on the formation of the classes to give instruction in any branch which came within his power; and he would say further, that where he was not himself competent, he would undertake to find masters at his own expense. He urged the young men to lose no time in taking advantage of the boon now offered to them.—The Rev. R. C. Black thought the scheme deserved encouragement; it was too often the case that when youths left school they thought their education was finished; whereas they had in fact only laid the foundation for that more serious study which was to aid them if they desired to attain distinction in after life.—The Rev. V. H. Millard spoke of the great advantage which the plan held out to young men with any pretensions to ability and perseverance. Some of the most eminent men of the present day had risen from the lower classes, by that systematic attention to any particular study for which their minds seemed to be designed. He instanced Sir Joseph Paxton, who was originally only a labouring lad in the Duke of Devonshire's garden; the late Hugh Miller, the geologist, who for many years worked in a quarry, and obtained his first insight into the depths of that science from the circumstance of being so placed; but then, when the talent in either case displayed itself, these men read and thought and worked hard to attain the proficiency which they subsequently enjoyed. And so it must be with all who desired to excel. They must *educate* the particular talent with which they were blessed; the muscular arm of the brawny smith could never wield the sledge hammer, if it were not trained to the occupation; and what that training was to the arm, education was to the mind; it formed it, strengthened it, and enabled it to overcome all difficulties that stood in the way of its advancement. The Society of Arts, desirous to promote the education of the people, had instituted these prizes, that there might be some incentive to study, and he saw no reason why some of those he saw around him should not participate in them, if with a vigorous determination they set themselves to work to do so.—Some other gentlemen briefly addressed the meeting, and thanks having been voted to the chairman, the meeting broke up.

Masham.—The inauguration of the new building to be called the Riddell Memorial Mechanics' Institute, took place on Monday, the 3rd inst. It contains a well proportioned class-room, a library and reading-room, besides a large vestibule, staircase, kitchen, &c., and a lecture-room, forty feet by twenty feet, with an elegantly designed roof and pannelled ceiling, a committee-room, an ante-room, a room intended for a museum, &c. The style is plain Italian, and presents three elevations, that in the centre with a southern aspect being very handsome. The chair was taken by J. Fisher, Esq., who, after having opened the business of the meeting, read the report of the building committee, which congratulates the subscribers on the successful accomplishment of their undertaking, in the completion of the very handsome building in which they were assembled, for the purpose of inaugurating it as a memorial to the memory of their much esteemed vicar, the late Rev. Thomas Riddell, who, for a period of nearly 15 years, had endeared himself to those committed to his charge by his exemplary and pious life. Soon after his sudden and melancholy death, a strong desire was expressed by many of his parishioners and friends to pay some mark of respect to his memory, and at the same time to preserve and hand down to posterity some lasting and useful record of him and his connection with the parish. As he had in his lifetime taken a very lively interest in this Institute from its first establishment until his death, it was determined to erect to his memory a handsome bulding in Masham for a Mechanics' Institute, to be called "The Riddell Memorial Mechanics' Institute." The Master and Fellows of Trinity College, Cambridge, granted the site, and gave a donation of £20 towards the building fund. A subscription was set on foot for the erection of the building, and in a short time it amounted to the sum of £461. The ladies of Masham formed themselves into a committee and got up a fancy fair and bazaar in aid of the building fund. This was held, by the kind permission of Admiral and Mrs. Danby Vernon Harcourt, in Swinton Park, on the 9th of July last, and realised the sum of £275, which, with the £461 raised by subscription, made the sum of £736 applicable to the erection of the building. In addition to this it should be mentioned, that many of the neighbouring farmers gratuitously led a great portion of the materials for the building. The funds having been thus raised, Messrs. Perkin and Backhouse, architects, of Leeds, kindly volunteered to present the committee with the design of the present edifice. The first stone was laid on the 15th of March last, by Admiral Harcourt, of Swinton-park, in the presence of Timothy Hutton, Esq., of Clifton Castle, the Rev. Thos. Hedley, M.A., Vicar of Masham, William Perkin, Esq. (the architect), the officers and committee of the Institute, and a large concourse of the inhabitants of Masham and its neighbourhood. The Rev. Canon Trevor, of York, in an address of some length, moved the adoption of the report, which was seconded by the Rev. Thos. Hedley, Vicar of Masham; the Rev. Dr. Whiteside, Vicar of Scarborongh, the Rev. S. H. Atkins, of Studley, Barnett Blake, Esq., lecturer to the Yorkshire Union of Mechanics' Institutes, and the Rev. Phineas Stubbs, Vicar of Well, subsequently addressed the meeting, which separated after passing several votes of thanks.

Wakefield.—The Annual Report of the Mechanics' Institution states that the Exhibition and Bazaar held last year, with a view to paying off the debt upon the purchase of the building, realised upwards of £1,000.

The number of members at present on the books is 812, and the average attendance at the Monday evening lectures has been about 300. The lecturers were as follows:—Dr. Cantor, London—The Philosophy of Nutrition; Physionomy and Temperament. T. Brittain, Esq., Manchester—The Microscope applied to Animal Physiology. Mr. John Cameron—Cram and Culture; Books, and how to read them, illustrated by Readings and Critical Exposition of Passages; Artistic, Scientific, and Philosophic Culture. Rev. J. G. Miall, Bradford—The History of Transit, Ancient and Modern. Rev. W. H. Channing—On American Slavery. E. H. Durden, Esq., F.C.S., Leeds—New Materials for the Manufacture of Paper. Henry Currer Briggs, Esq.—On the difficulties attending the safe and successful working of Coal Mines. R. M. Milnes, Esq., M.P.—A Reading from his own Poems. S. Wilderspin, Esq.—On Infant Education. Rev. H. V. Palmer, York—Modern Fortification, its principles familiarly explained and illustrated. E. B. Wheatley, Esq., Hopton—On certain Industrial Schools in France. Frederick Dykes, Esq., Beverley—French Literature in the 12th and 13th Centuries. T. G. Wright, Esq., M.D.—The Magnetic Telegraph. Rev. J. S. Eastmead—The Vicar of Wakefield and its Author. Mr. Edmund Wheeler, London—Electric Telegraphs for Printing, Writing, and Copying; Stationary, Marine, and Locomotive Steam Engines, illustrated by Diagrams and Working Models. Mr. Samuel Braithwaite, Whitby—Jet and its Manufacture. Rev. W. R. Bowditch—The Science of Common Things. Dr. William Alexander, Halifax—The Injuries to Health incident to certain Mining and Manufacturing Processes. Rev. J. H. Ryland—The Early Life and Writings of Milton. Mr. John Newby, Ackworth—The Institution of the Knights Templars. J. B. Greenwood, Esq., Dewsbury—What are we to do with our Young Thieves? Rev. A. Perry, M.D.—On the Human Brain, considered in some of its relations, physical, intellectual, and moral. Rev. A. Cassels, Batley—On Shoddy, and its Manufacture. In addition to the above, a course of ten lectures was delivered by the Rev. W. R. Bowditch, "On the Scientific Principles of some Common Things," and one by the Rev. A. J. D'Orsey, on "What to learn, and how to learn it." An improvement as to number and quality has taken place in the classes, and the subjects taught are reading, writing, and arithmetic, French, pencil drawing, modelling, chemistry, and natural history. The Practical Art Class, for Free-hand and Mechanical Drawing, Designing, and Modelling, is conducted by Mr. J. White, head master of the Leeds School of Practical Art. This class meets every Tuesday evening, and affords especial advantages to Masons, Builders, Plasterers, Joiners, Cabinet-Makers, Upholsterers, Carvers and Gilders, Painters, Machinists, Ironfounders, and all whose business requires a knowledge of Drawing, Designing, and Modelling. Such members of the class as are sufficiently advanced, will be eligible to compete for the prizes and certificates offered by the Society of Arts, at the Examination which is to be held at Huddersfield next Whitsuntide.

MEETINGS FOR THE ENSUING WEEK.

Mon. Actuaries, 8.
Geographical, 8½. I. Lieut. Pim, "Plan for a further Search after the remains of the Franklin Expedition." II. Letter from Dr. Vogel, of the Central African Expedition.
Tues. Meteorological, 7.
Civil Engineers, 8. Mr. T. T. Jopling "On Recent Improvements in Water Meters."
Med. and Chirurg., 8½.
Zoological, 9.
Wed. Society of Arts, 8. Dr. J. Forbes Royle "On Indian Fibres."
Microscopical, 8.
R. S. Literature, 8½.
Archæological, 8½.
Thurs. Antiquaries, 8.
Royal, 8½.
Sat. Medical, 8.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[*From Gazette, November 14th*, 1856.]

Dated 15th September, 1856.

2152. Felix Moreau, 39, Rue de l'Echiquier, Paris—Improvements applicable to the tops of omnibuses and other carriages.

Dated 1st October, 1856.

2290. Pierre Armand le Comte de Fontaine-Moreau, 39, Rue de l'Echiquier, Paris—An improved voltaic battery. (A communication.)

Dated 3rd October, 1856.

2321. Blanche Palmire Mosqueron, Widow Vilcoq, Paris—An improved lamp oil.

Dated 9th October, 1856.

2363. William Stettinius Clark, High Holborn—Improvements in the construction of churns for producing butter. (A communication.)

2370. John Shaw and Edwin Shaw, Glossop, Derby—Certain improvements in pianofortes, organs, harmoniums, and other similar keyed musical instruments.

Dated 11th October, 1856.

2385. Anton Bruno Seithen, 12, Alpha-place, Caledonian-road—Improvements in machinery or apparatus for cutting cork in the process of shaping and making stoppers of cork, and in the treatment of cork to be employed in the said processes, and to be applied to other useful purposes.

Dated October 17th, 1856.

2328. George Wilson, Glasgow—Improvements in power looms.

Dated 20th October, 1856.

2455. Robert George Barrow, 15, Wade-street, Poplar—A self-maintaining motive power obtained from water, air, or any other fluid or liquid.

2459. Charles Robert Freeman, Eaton, Norwich, and William Drake Key, Norwich—Improvements in manufacturing food for animals.

Dated October 22nd, 1856.

2479. Carl Heinrich Julius Wilhem Maximilian Liebmann, Fartown Huddersfield—An improvement in purifying water. (A communication).

Dated 23rd October, 1856.

2486. George Edward Johns, 4, Falcon-street, London—The application and adaptation of an optical or stereoscopic arrangement in the manufacture of boxes.

Dated 25th October, 1856.

2508. William Benson, Four Stones, near Hexham, Northumberland—Improvements in apparatus for drying grain, seeds, and other substances.

2510. Joseph Sexton, Leicester-square—Improvements in the construction of caustic holders, applicable also to the holding of leads, chalks, and other marking materials.

2514. Thomas Brown, Fenchurch-street—Improvements in capstans and windlasses.

Dated 27th October, 1856.

2515. Benjamin Ferrey, Trinity-place, Charing-cross—An improvement in producing ornamental plastering or stucco work.

2516. John Birkin, West Bridgeford, Nottingham—Improvements in dressing and cleaning wheat and other grain.

2517. Hugo Frederick Forbes, Florence, Tuscany—An improved copying press.

2519. Thomas Allen, Adelphi-terrace—Improvements in the permanent way of railways.

2521. Philipp Schaffer and Frederick Schaffer, Brewer-street—An improved handle for desks, deed and despatch boxes, bags, furniture, and other articles to which handles are applied.

2522. William Edward Newton, 66, Chancery-lane—Improved means of economising the waste heat of furnaces or fire-places. (A communication).

2523. Michael Dognin, Lyons, France—Improvements in machinery for making lace or net.

Dated 28th October, 1856.

2524. William Brodie, Belhaven, East Lothian—Improvements in the manufacture or production of roofing tiles.

2525. Edward Thornhill Simpson, Calder Soap Works, Wakefield—Improvements in the manufacture of soap.

2526. Adolphe Ernest Ragon, Bernard-street, Ruesell-square—Improvements in apparatus for indicating and recording the speed of ships. (A communication.)

2527. William Septimus Losh, Wreay Syke, Cumberland—Improvements in the preparation of size, which may also be used as a waterproof varnish or coating.

2528. Jean Louis Marie, Paris—Improvements in raising, propelling, and forcing water and other fluids, and in obtaining motive power.

2529. William Armand Gilbee, 4, South-street, Finsbury—Improvements in the construction of smoke-consuming furnaces—(A communication.)

2530. Joseph Armstrong, Normanton—Improvements in the permanent way of railways.

2531. Samuel Russell, 12, Sheaf-gardens, Sheffield—Improvements in the manufacture of teapot-handles, knobs, door-plates, finger-plates, razor scales, and knife handles.

2532. James Kinder Cheetham, Rochdale, Lancashire—Improvements in the manufacture of iron and steel.

2533. Adolphe Aubril, Newman-street, Oxford-street—The novel application of a certain root to the manufacture of starch, paper, and cardboard.

Dated 29th October, 1856.

2535. Richard Hampson, Rochdale, Lancashire—Improvements in lubricating steam engines.
2537. Thomas Eyre Wyche, Camberwell—A method of disengaging metals from the matrix. (Partly a communication.)
2539. Thomas Clutton Salt, Birmingham—A new or improved method of coating with glass or enamelling surfaces of cast iron.
2541. Thomas Smith Henzell, South Shields—Improvements in the construction of ships or vessels.
2543. William Kopke, Hackney, Middlesex—An improved clasp-board to hold documents for reference.
2545. Peter Fairbairn, Leeds, and Robert Newton, Liverpool—Improvements in machinery for dressing waste silk.
2547. John Thomas Way, Welbeck-street—Improvements in obtaining light by electricity.
2549. John Macallum, Kames Gunpowder Mills, Argyle, N.B.—Improvements in the preparation or refining of saltpetre.

Dated 30th October, 1855.

2551. Constantine John Baptist Torassa, Genoa—An apparatus for calculating the speed of vessels at sea, as well as obtaining the extent of their destination caused by the side winds.
2553. John Gibbon, Northfleet, Kent—Improvements in chaff-cutting machines.
2555. Louis Urion, Nancy, France—Improvements in match boxes or holders.

Dated 31st October, 1856.

2556. Charles Augustus Ferguson, Millwall, Poplar—Improvements in preparing timber for ship-building, mast-making, and other purposes.
2557. John Lawson, 2, Morris-place, Glasgow—Improvements in the manufacture of pile and other fabrics.
2560. Francis Cook Matthews, Great Driffield, York—Improvements in preparing manure.
2561. Samuel Worssam, Chelsea, and John Grist, Islington—Improvements in machinery for cutting and shaping wood.
2562. Henry Hutton, Reading—Improvements in lubricators.

Dated 1st November, 1856.

2563. Edward Joseph Hughes, Manchester—An improved mode or method of concentrating the colouring matter of certain vegetable substances.
2564. Joseph Browne, Liverpool—Improvements in the construction and working of ships' windlasses and capstans, part of which improvements are also applicable for steering ships and other vessels.
2566. Benjamin Stott, Salford, near Manchester—Improvements in machinery or apparatus for preparing, spinning, and doubling cotton, wool, flax, or other fibrous materials.
2567. John Young, Wolverhampton—Improvements in flooring cramps and lifting jacks.
2568. John Parbery, Northampton—Certain improvements in horse collars.
2569. James Coul Sinclair, Elgin, Moray, N.B.—Improvements in treating, preparing, and drying agricultural produce.
2570. Thomas Ainsley Cook, Newcastle-on-Tyne—Improvements in treating manganese ores.
2571. John Warne, Blackfriars-road—Improvements in beer engines.
2572. Josiah Stone, Park Terrace, New Cross, Kent—Improvements in the construction of force pumps.
2573. William Henry Moore, 3, Wenlock-place, City-road—Improvements in railway signals.
2574. William Joseph Curtis, 1, Sebbon-street, Islington—Improvements in lighting and ventilating railway carriages.

Dated 3rd November, 1856.

2575. John Jobson, Litchurch, Derby—Improvements in the manufacture of railway chairs.
2576. Samuel Tearne, and George William Richmond, Birmingham—Certain improvements in producing ornamental designs on the surfaces of fancy and other goods made of papier mache, wood, glass, china, earthenware, tin, iron, or other such like materials, the surfaces of which when made up are usually finished by staining, varnishing, painting, or japanning.
2577. James Nasmyth and Robert Wilson, Patricroft, near Manchester—Improvements in hydraulic pumps and presses for packing cotton and other articles of the like nature.
2578. Samuel Middleton, 15, Porter-street, Newport-market—Improvements in the manufacture of certain articles of leather without seams.
2579. John White, Glasgow—Improvements in preparing for spinning cotton and other fibrous substances.
2581. Ebenezer Erskine Scott, Dundee—Improvements in stereoscopes.
2583. John Kirkham, Tonbridge-place, New-road—Improvements in the construction of furnaces, ovens, or kilns for drying, baking, or burning pottery, earthenware, bricks, tiles, or other similar articles, and in the means of collecting and condehsing the smoke, gases, or vapours evolved from the fuel in such or other furnaces or fireplaces, or that escapes from the retorts and other parts of the apparatus used in the manufacture of gas.

Dated 4th November, 1856.

2584. Joshua Murgatroyd, Stockport—Improvements in machinery or apparatus for spinning, cleaning, doubling, and throwing silk, part of which improvements are applicable to machinery for roving and doubling cotton and other fibrous substances.
2585. Henry Bessemer, Queen-street-place, New Cannon-street—Improvements in the manufacture of rails, or railway bars, and axles.
2586. Ethan Campbell, Boston, U.S.—A new and useful or improved apparatus for propelling a navigable vessel.
2587. William Gray and John Tate, Newcastle-on-Tyne—Improvements in apparatus for washing.
2588. Joseph Jessop, West Gate, Bradford—Improvements in machinery for washing, wringing, and mangleing.
2589. Samuel Cotton, Broughton, near Manchester—An improved mode or method of regulating or governing lift, tilt, or other hammers worked by mechanical power.
2590. William Edward Newton, 66, Chancery-lane—Improved machinery for riming and tapping gas fittings. (A communication.)
2591. William Edward Newton, 66, Chancery-lane—Improved machinery for sweeping floors, streets, and walks. (A communication.)

Dated 5th November, 1856.

2593. William Weild, Manchester—Improvements in velvet or cut pile fabrics, and in looms or machinery used for weaving such velvet and other loop pile fabrics.
2595. William Edward Wiley, 34, Great Hampton-street, Birmingham—Improvements in pen-holders.
2597. James Fernihough, Dukinfield, Chester, and Robert Farrow, Leek, Stafford—A self-acting apparatus for regulating the supply of atmospheric air to furnaces, gas stoves, and other closed vessels used for the consumption of fuel or combustible gases, by preventing the formation of smoke therefrom, and thereby economising such fuel or combustible gases.
2599. William Clissold, Dudbridge, Gloucestershire—Improved apparatus for regulating the supply of water to water-wheels.
2601. Henry Hill, Stepney—An improvement in locks for bags and other like articles.
2603. Robert William Sievier, Upper Holloway—An improvement in the mode of treating saccharine juices in the manufacture of sugar.

WEEKLY LIST OF PATENTS SEALED.

Sealed November 14th, 1856.

1138. Uriah Scott.
1145. William Evans.
1148. William Norris and Robert King.
1149. James Young Simpson and Wyville Thomson.
1151. Robert Foulds and William Bracewell.
1159. William Thistlethwaite.
1166. Richard Coleman.
1167. David Curwood.
1171. Louis Cornides.
1172. Johan Jacob Meyer.
1175. Richard Knight.
1187. William Maugham.
1225. Germain Barruel.
1261. John Roberts.
1262. Thomas Charlton and William Turnbull.
1263. James Baird.
1292. Henry Bessemer.
1293. William Gossage.
1308. James Nasmyth.
1507. James Aikman.
1815. Thomas Wicksteed.
2952. Joseph Crossley and James Bolton.
1977. William Webb.
2051. John Morrison and Samuel Amphlet.
2121. John Blythe Robinson.

Sealed November 18th, 1856.

1191. James Anning Gollop.
1199. Robert Pemberton.
1209. Macleroy Neilson.
1220. William Richelieu Hodges.
1222. Alexandre Tolhausen.
1237. John Gedge.
1307. Delia Avery.
1329. Reuben Boyce Wigley.
1345. Duncan Lang.
1375. Richard Archibald Brooman.
1383. Henry Benson James.
1385. William Bayliss.
1461. George Davies.
1506. John Portus.
1605. Henry Page.
1687. Charles Carey.
1807. Constantine John Baptist Torassa.
1981. Henry Bessemer.
1987. Charles Carey.
2097. John Watson and Charles Frederic Halle.

PATENTS ON WHICH THE THIRD YEAR'S STAMP DUTY HAS BEEN PAID.

November 11th.

2627. William Austin.
2682. Moses Poole.

November 12th.

2634. Henry Willis.

November 13th.

2639. William Smith.
2641. Charles De Bergue.

November 14th.

2768. Prix Charles Jean Baptiste Sochet.

November 15th.

2656. David Pratt.
1680. James Melville.

WEEKLY LIST OF DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

No. in the Register.	Date of Registration.	Title.	Proprietors' Name.	Address.
3901	Nov. 6.	Portable Iron Military Music Stand	Key, Rudall, and Co.	Charing Cross.
3902	„ 8.	Back Pulley	Taylor, Allen, and Taylor	Birmingham.
3903	„ „	Boiler for Hot-water Apparatus	John Pedley.........................	Charlton, near Manchester.
3904	„ 11.	Coffee Pot..	Henry Craigie	Edinburgh.
3905	„ 13.	A Travelling Rug or Wrapper..............	Leonard Hicks .... John Edward Smith	Leeds. 6 and 7, New Kent-road.